STATE OF MONTANA

DEPARTMENT OF

FISH AND GAME

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Antelope

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[illegible]

antelope

JOB COMPLETION REPORT

INVESTIGATIONS PROJECT

State of Montana

Project No. W-98-R-2

Name Big Game Research Project

Job No. B-3

Title Population Organization and Home Range of Pronghorn Antelope

Period Covered: January 1, 1962 to May 31, 1962

Objectives: To communicate basic information which will facilitate the improvement of management techniques for the pronghorn antelope.

Procedures:

1. Tabulate and analyze data collected incidental to the 1954-57 research studies of antelope food and range use habits and relationships to alfalfa and wheat.
2. Obtain supplemental data from the field.
3. Prepare a technical report.

Preliminary work on this job involved selecting a suitable study area, preparing field data forms which would permit IBM data processing, procuring and preparing grid maps for field use, reviewing literature and setting up previously-obtained antelope research data for IBM processing.

A 60 square mile study area was selected in Broadwater County. From February 27 through May 9, 21 days were spent covering routes through the study area. Observations of a total of 3,783 antelope were recorded with respect to their numbers, sex and age classes, group composition, behavior, occurrences on vegetational types and locations. The maximum number (unduplicated) of antelope observed in any one day was 161. Supplemental data on behavior was also recorded from animals observed over extended periods and 2,979 instances of plant use, by species, were recorded at 31 antelope feeding sites. Data are too limited to warrant analysis.

Some of the anticipated applications of research findings to pronghorn management are covered in the attached April 23 Memo to Department Personnel. Unfortunately, the research was interrupted by the Project Leader accepting employment elsewhere and it is doubtful the study will be carried to completion.

Recommendations:

It is recommended that the job be terminated until such time as a biologist would be available to carry on pronghorn antelope research.

Prepared by Glen F. Cole

Approved by Fletcher E. Newby

Date May 31, 1962

STATE Montana
PROJECT NO. W-59-R-1
DATE April 15, 1954
VOL. V NO. 1

Title of Project: Eastern Montana Big Game Surveys

Leader: Don L. Brown

Job Completion Report Job No. I-A Investigations Projects

Title of Job: Antelope Census

PERSONNEL: Don L. Brown, Senior Biologist (Pilot)
Ralph Cooper, Deputy Game Warden (Pilot)
Waldo Vangsness, Deputy Game Warden (Pilot)
Charles Loberg, Deputy Game Warden
Wayne Fitzwater, Deputy Game Warden
George Chaffee, Junior Biologist
Robert Eng, Junior Biologist
Joseph Egan, Junior Biologist
Donald Kenczka, Student Assistant
Joe Gaab, Senior Biologist
Mr. Larsen, Rancher

OBJECTIVES:

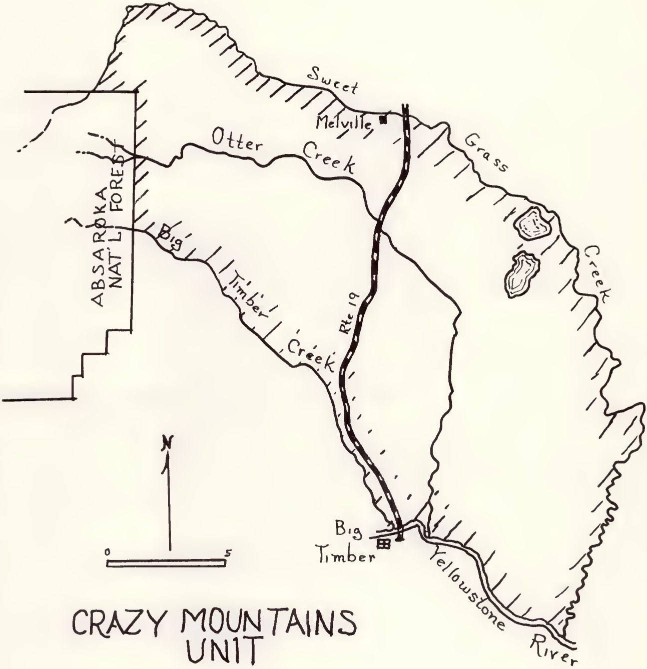
To determine the antelope density in the areas shown on Maps I and II.

PURPOSE:

Except for the Crazy Mountains area (Map I), none of these areas have ever been censused. The ever-increasing numbers of complaints from ranchers made it mandatory that the areas be counted and if feasible be included in the 1953 antelope season.

TECHNIQUE USED:

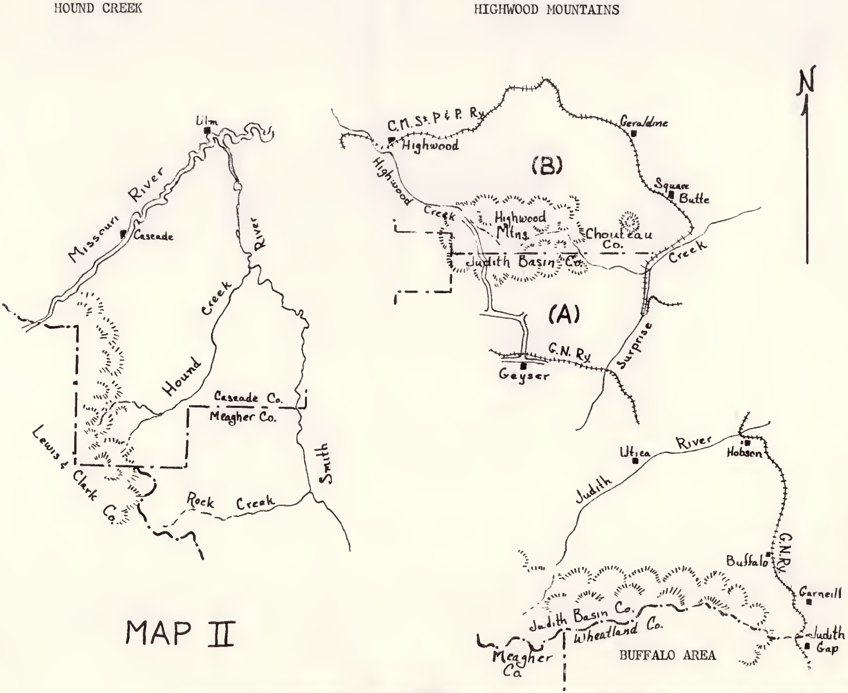
Both Fish and Game Department planes were used, PA-18, 125 hp., and PA-18, 135 hp., in this survey to expedite the operation. Complete coverage survey method was employed but in order to cover the entire area in one flight very little time was spent in sexing and aging. Two of the areas, north of the Little Belt Mountains and around the Highwood Mountains, were covered before the fawns were active enough to be accurately counted. Thus, all fawns were excluded and for purpose of management a normal increase factor was applied.


Sweet
Grass
Creek
Melville
Otter
Creek
ABSAROKA
NAT'L FOREST
Big
Timber
Creek
Rte 19
N
0
5
Big
Timber
Yellowstone
River

CRAZY MOUNTAINS
UNIT

Area Boundary — ///////

MAP I



HOUND CREEK

HIGHWOOD MOUNTAINS

BUFFALO AREA

Ulm
Missouri River
Cascade
River
Hound Creek
Cascade Co.
Meagher Co.
Lewis & Clark Co.
Rock Creek
Smith
C.M. St. P & P. Ry
Highwood
Geraldine
(B)
Square Butte
Highwood Creek
Highwood Mtns
Chouteau Co.
Judith Basin Co.
Creek
(A)
G.N. Ry
Geyser
Surprise
N
Utica
River
Hobson
Judith
G.N.Ry.
Buffalo
Garneill
Judith Basin Co.
Wheatland Co.
Judith Gap
Meagher Co.

MAP II

FINDINGS:

For area description see Maps I and II.

DATE	AREA	UNCL.	BUCKS	DOES	FAWNS	TOTAL
7-16-52	Crazy Mountains	330	54	79	79	542
7-16-53	Crazy Mountains	286	63	103	109	561
9-29-53	Crazy Mountains	578	-	-	-	578*
6- 9-53	Buffalo	39	116	93	not counted	248
6-10-53	Geyser (A)	193	55	73	"	321
6-11-53	Highwood (B)	81	15	31	"	127
7-20-53	Hound Creek	331	92	100	80	603

* Second count, ranchers were of the opinion first count was not complete. Joe Gaab and rancher Larsen flew area recheck.

CONCLUSIONS AND RECOMMENDATIONS:

Areas above will have to be kept under constant surveillance in order to curb excessive economic conflict with grain crops. The areas are small and antelope were recently introduced either by transplanting or by migrating from adjoining areas.

It is recommended the herd be controlled in order to maintain a summer herd of not more than five hundred animals. Hunting seasons will usually redistribute the antelope within an area and provide for a small increase without an increase in economic conflict.

It was recommended that separate hunting areas be set up for the Crazy Mountains, Buffalo and Hound Creek and that 125, 240 and 200 permits respectively be issued. It was further recommended that a portion of the above permits be restricted to bucks only.

The Geyser and Highwood areas were included in hunting area 7 and an increased number of permits issued.

Submitted by:	Approved by:
Name Don L. Brown	Montana State Department of Fish and Game
Title Senior Biologist	By Faye M. Couey, Assistant Director
Name Joseph L. Egan	Wildlife Restoration Division
Title Junior Biologist	Date April 15, 1954

JOB PROGRESS REPORT

INVESTIGATIONS PROJECTS

State of Montana

Project No. 1-R (Eastern) Work Plan No. I Job No. I-A

Title of Job Eastern Montana Antelope Survey

Date May and June 1953

PERSONNEL:
W. Linville, Deputy Warden
W. Maloit, Deputy Warden
R. Shields, Deputy Warden
J. Nicolay, Deputy Warden
Don L. Brown, Biologist
G. Chaffee, Junior Biologist
J. Egan, Junior Biologist

OBJECTIVES:

To obtain antelope densities and yearly population fluctuations in the big game management units of eastern, Montana.

TECHNIQUES USED:

The units were covered by the aerial strip method, using partial and complete counts. The complete count was used in areas reported to have excessive numbers of antelope and in certain representative areas of the Glendive Management Unit. In complete counts the north-south flight strips are one mile apart. Indications are, that practically all of the antelope are observed in areas covered by this manner.

In employing the partial count, the north-south flight strips are six miles apart and a population for areas covered by this method must be computed. Dividing the number of antelope observed by the strip miles (antelope per square mile) and multiplying this figure by total square miles, gives a computed antelope population.

For both types of coverage, the observer tabulates all antelope within 1/2 mile on each side of the flight strip.

Since the survey was started prior to the appearance of many fawns, they were not counted during the survey.

To facilitate coverage during the survey, prominent topographic features such as roads, creeks, etc., were used to delineate areas of a workable size.

The survey covered the Powder River, Carter, Custer and Missouri Breaks Management Units and a portion of the Glendive Management Unit. Areas of total and partial coverage are shown in Figure I. (Complete coverage in red, partial not colored)

With a few exceptions, all flights were made during the first two to four hours after sunrise and the two to four hours before sunset.

FINDINGS:

For the area covered as shown in Figure I, a total of 31,775 antelope was ascertained to be present. (The foregoing figure does not include fawns.)

Buck-doe ratios ran from 1:0.4 to 1:3.5, and antelope densities ran from 0.5 antelope per square mile to 2.7 per square mile. These are shown in Table I.

Areas A, B, C and D, representing sample areas in the Glendive Unit are not included in Table I, they are listed below as to antelope observed, and square miles surveyed.

Area	Antelope Observed	Total Area (Sq. Miles)
A	22	124
B	17	154
C	6	50
D	139	171

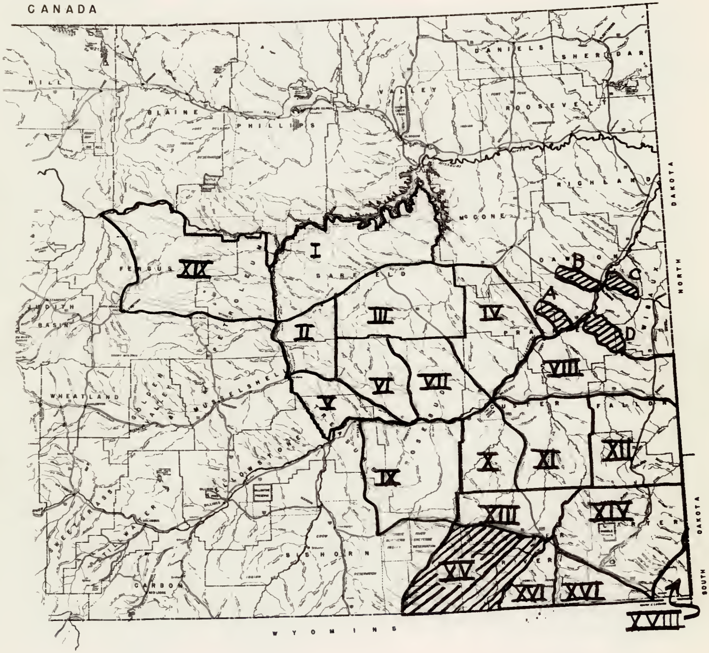
In setting up the 1953 hunting seasons for the areas surveyed, a figure of 50% was added to the populations to compensate for the current fawn crop. This gives a total computed population of approximately 48,000 antelope.

CONCLUSIONS AND RECOMMENDATIONS:

The computed population of 48,000 is not felt to be a saturated population for the area surveyed. There exists, however, a feeling by many ranchers that this number of antelope constitutes a serious menace to the agricultural activities in the area.

For this reason and until data are accumulated which will ascertain the optimum number of antelope that can be present on the various portions of the area surveyed, it is recommended

Figure 1. Eastern Montana Antelope Survey



CANADA
DANIELS
SHERIDAN
HILL
VALLEY
BLAINE
PHILLIPS
ROOSEVELT
RICHLAND
McCONE
NORTH DAKOTA
FERGUS
XIX
I
GARFIELD
DAWSON
B
C
A
D
WIBAUX
JUDITH BASIN
II
III
IV
PRAIRIE
VIII
WHEATLAND
MUSSELSHELL
VI
VII
V
CUSTER
FALLON
X
XI
XII
IX
YELLOWSTONE
XIII
XIV
CARTER
XV
XVI
XVI
XVIII
BIG HORN
CARBON
WYOMING
SOUTH DAKOTA

//// Complete Coverage (1 Mile Strips)

TABLE I

Area	Number Antelope Observed	Strip Miles	Antelope Per Sq. Mile	Total Area (Sq.Mi.)	Buck Doe Ratio	Total Antelope Computed	% Antelope Classified
I	211	282	0.75	2554	1:1.21	1915	44
II	435	160	2.70	698	1:1.65	1871	62
III	242	245	0.99	2163	1:1.1	2141	56
IV	288	323	0.88	2113	1:0.83	1859	62
V	152	111	1.37	703	1:0.94	963	59
VI	305	116	2.6	968	1:0.97	2517	48
VII	112	191	0.58	942	1:2.0	546	58
VIII	173	153	1.13	1045	1:1.14	1181	80
IX*	77	110	0.70	2845	1:0.4	1992	55
X	122	58	2.10	952	1:0.95	1999	30
XI	164	167	0.98	1531	1:0.90	1500	44
XII	212	228	0.92	1513	1:3.61	1392	69
XIII	233	237	0.98	1102	1:0.85	1083	39
XIV	394	271	1.45	2041	1:0.78	2960	49
XV**	1328	1491	0.89	1491	1:1.93	1328	65
XVI	145	90	1.61	504	1:0.66	811	47
XVII	173	125	1.38	1454	1:0.81	2007	43
XVIII	176	71	2.48	300	1:0.46	744	38
XVIX	347	365	.95	3123	1:1.50	2966	55
	5289					31,775	

* Sample area of Northern half.

** Total coverage.

the above figure be reduced by hunting by 35% or a reduction of 16,675 head of antelope.

Providing the reduction is accomplished this fall, it is further recommended that in subsequent years the annual increase be harvested.

Annual or biennial surveys will produce the bulk of the necessary information needed to properly manage antelope in Eastern Montana.

Prepared by:	Approved by:
Name Joe L. Egan	Name Don L. Brown
Date August 3, 1953	

JOB PROGRESS REPORT

INVESTIGATIONS PROJECTS

State of Montana

Project No. W-1-R-12 Work Plan No. I Job No. I-D

Title of Job: Study of Antelope Losses by Hunting and Natural Causes

Date: September 19 to October 5, 1952, inclusive.

PERSONNEL: Joe Egan, Junior Biologist
Frank Dunkle, Deputy Game Warden
Warren Linville, Deputy Game Warden

OBJECTIVES:

To ascertain numbers and sex of antelope killed during the September 19 to October 5, 1952, antelope season on Area 39.

To ascertain success and origin of hunters.

TECHNIQUES USED:

The hunters were contacted in the field, since no checking stations were used. The area was divided into three sections.

The Western section of the area being bordered by the Tongue River, the Powder River - Custer County line, the Pumpkin Creek - Sayle Road and the Wyoming line; the Central section was bounded by the Pumpkin Creek - Sayle road, the Powder River - Custer County line, the Powder River, the Little Powder River, and the Wyoming line; and the Eastern section was bounded by the Little Powder River, Highway 212, and the Wyoming line.

Three men worked the three sections during the first three days of the season, two men worked the three sections from September 26 to the 28th, and one man worked the Central and Eastern sections on October 4th and 5th.

Daylight to dark were the hours of investigation for the days shown.

FINDINGS:

Number and sex of antelope actually checked for Area 39, September 19 - October 5, 1952 (indicated by days). See Table I.

Origin of successful hunters checked. See Table II.

In addition the following antelope from Area 40 were checked. See Table III.

Table I. Number and Sex of Antelope Checked in Area 39

Date	Ad. Males	Ad. Females	Fawn Males	Fawn Females	Total
September 19	20	3	-	-	23
September 20	15	1	-	-	18
September 21	5	-	-	-	5
September 26	-	-	-	-	-
September 27	2	-	-	-	2
September 28	1	-	-	-	1
October 3	1	-	-	-	1
October 4	-	-	-	-	-
October 5	-	-	-	-	-
Total	44	4	-	2	50

Table II. Origin of Successful Hunters Checked.

Town	Number	Percent
Billings	10	20
Forsyth	2	4
Glendive	3	6
Hardin	18	36
Miles City	2	4
Local (Within fifty miles of area)	4	8
Other (Bozeman, Dagmar, Helena, Philipsburg & Shepherd)	11	22
Total	50	

Table III. Antelope Checked from Area 40.

Date	Ad. Males	Ad. Females	Fawn Males	Fawn Females	Total
September 20	7	1	1	-	9

CONCLUSIONS AND RECOMMENDATIONS:

Field contacts with the hunters, together with observations, tend to indicate that most hunters were successful in bagging their game.

The data collected was considerably below the amount anticipated. This can be attributed to the large area, and the many access roads.

Because of these conditions, the numbers of hunters contacted in the field was limited. For the same reasons, the great numbers of checking stations required would be impractical.

The antelope of this area recently show a tendency to adapt themselves to habitats not previously considered antelope range (i.e. sparsely timbered areas and open areas surrounded by timber). And accompanied by the assumption there exists a migration to and from Wyoming, insufficient data has been collected to manage this herd.

It is recommended that management of this herd be based on data accumulated by annual or biennial counts.

Submitted by Joe Egan　Approved by Don L. Brown

Date December 29, 1952

STATE Montana

PROJECT 1-R-11 (Eastern)

DATE January 15, 1952

AGE COMPOSITION OF THE 1951 ANTELOPE HARVEST

Cooperative Project between Montana Cooperative Wildlife Research Unit and Wildlife Restoration Division of Montana Fish and Game Department (1-R-11 Eastern Montana)

DATE: Fall 1951

PERSONNEL: Sumner Dow, Temporary Junior Biologist and Unit Fellow of the Montana Cooperative Wildlife Research Unit.
Fish and Game Department Personnel

PURPOSE:

1. To obtain a sufficient number of antelope lower jaw bones to be used in determining the age composition of theantelope herds of the State.

2. To obtain enough antelope jaws in each age class to give the extremes in variation of tooth development and wear within classes.

PROCEDURES:

1. Prior to the antelope season 3,000 circulars and jaw containers were mailed to approximately one-third of the hunters receiving antelope permits. The circulars explained the purpose of the collection and outlined the procedure to be followed if the hunter wished to cooperate. (See sample I and II). The jaw containers were 6½x9½" Manila business reply envelopes printed with address to the Wildlife Research Unit, Montana State University.

The jaws were catalogued at the Wildlife Unit as they were received. Later they were classified into age groups and tabulated. The jaws were placed in four age groups: Fawns, yearlings, 2½, and over 2½. The number of age groups was limited by the number of known-age specimens available.

FINDINGS:

Total jaw containers issued	3,000
Total jaw containers returned	1,322 or 44.4%
Jaws received with complete data	1,224 or 92.6% of those received.

It is understood that there may be an error in sex determination by the hunters.

The data below are compiled from those areas in which only either sex hunting was allowed.

Incomplete data:

Jaws not enclosed	9
Location not given	13
Sex not given	62
Hunter stated he was unsuccessful	8
Hunter stated he did not hunt	2
Hunter stated that head was used as trophy	4
	98 or 7.3%

Reproduction data:

Doe-fawn ratio (yearling does included)	100 to 53.5
Doe-fawn ratio (yearling does not included)	100 to 72.6
Adult-fawn ratio (yearlings included)	100 to 30.4
Buck fawn-doe fawn ratio	100 to 80.9
Adult buck-adult doe ratio	100 to 64.6

Herd Harvest composition:

Age Class	Number	Percentage
Fawn	199	17.0
Yearling	371	31.6
2.5	165	14.0
Over 2.5	440	37.4
Total	1,175	100.0

CONCLUSIONS:

The age composition of the sample from Area 9 is very similar to that of the total collection. Area 9 would seem to present the most adequate sample and typifies the total sample.

We succeeded in obtaining a sufficient number of antelope lower jaws to determine the age composition of the antelope kill in 1951 in this State and if the kill data were projected against the census data for 1951 (I have not had the census

(Sample I) HUNTERS - Please Send Us the Lower Jaws from Your Antelope

WHY? We want to know the distribution of age groups in the several herds of antelope that you'll be hunting in Montana. By a study of tooth development and wear, we will be able to determine the approximate age of your antelope. With a sufficient sample of jaws from different herds, we intend answering such questions as:

1. What is the average life span?
2. What per cent of last year's fawns are alive this September?
3. What per cent of last year's yearlings are alive to date, and so on for the older age classes?
4. How long do antelope live in nature?
5. Is there a high mortality in different herds that cannot be accounted for by your kills?
6. Is a heavier or lighter harvest needed?

HOW you can help us answer these questions:

1. By removing the lower jaw from your antelope and sending it to us in the envelope provided. See illustrations of how to remove lower jaws (reverse side of this sheet).
2. By carefully supplying the information asked for on the face of each envelope, i.e. date collected, locality, county, and whether male or female.
3. Return envelope with jaw, no postage necessary; or turn over to a representative of the State Fish and Game Department.
4. If you would like to know the approximate age of your animal, please put your name and address on the envelope; and at the conclusion of this study, we will mail you our estimate.

Thank you for cooperating.

(Sample II) Antelope Jaw Collection 1951

Area	Permits	Fawns		Yearlings		2 and 1/2		Over 2 1/2		Total
		* M	F	M	F	M	F	M	F	
		----Areas in which Both Sexes Were Taken----								
1	50 MF	3	3	1	0	0	0	2	2	11
2	200 MF	5	5	5	1	3	4	14	7	44
3	500 MF	12	7	9	12	6	6	10	21	84
4	500 MF	10	10	11	7	4	4	9	12	67
5	900 MF	17	10	15	11	8	6	15	20	102
6	300 MF	2	2	4	2	1	2	2	7	22
7	600 MF	11	6	11	4	1	4	10	21	68
9	1,500 MF	17	13	42	19	17	10	28	38	194
10	1,100 MF	13	9	41	14	13	8	28	31	157
11	200 MF	1	3	15	5	11	0	12	7	54
12	300 MF	4	1	12	1	7	0	12	2	39
13	200 MF	1	7	22	5	6	0	25	9	75
19	50 MF	0	1	7	2	3	0	2	1	16
20	200 MF	1	1	13	0	5	0	5	2	27
21	200 MF	4	3	17	2	7	1	6	7	47
22	550 MF	5	6	37	7	7	9	27	12	110
23	50 MF	0	0	1	0	0	2	0	1	4
24	100 MF	0	0	5	1	0	1	5	0	12
25	35 MF	2	0	1	1	0	0	1	1	6
26 27 28	275 MF	1	2	3	3	4	4	5	10	32
30 31 32 33	400 MF	1	0	1	0	0	1	0	1	4
	8,210	110	89	273	98	103	62	228	212	1,175
		--Areas in which Bucks only or Either Sex were Taken--								
14	50 M	0	0	8	0	5	0	2	0	15
15	50 MF 25 M	1	1	5	2	3	1	2	2	17
16	25 M	0	0	0	0	1	0	0	0	1
17 18	100 MF100 MF	0	0	6	1	3	1	4	1	16
		1	1	19	3	12	2	8	3	49
Those with insufficient data										98
								Total -		1,322

* M - Male, F - Female

data available in order to do this) the total degree of selection by hunters of adult over fawn and of buck over doe could be determined.

The sample is large enough that the figures for sex and age composition are entirely adequate.

Although it is not evident from the table as it is shown, there is an increase in the fawn kill during the October-November season as against that in September. This may indicate that fawns are more difficult to distinguish from adults in November or possibly that after one harvest the fawns make up a greater percent of the total than before.

It was of interest to learn that 37.4 per cent of the sample harvest was constituted by animals 3½ years and older. A sample harvest of deer from the Swan-Clearwater drainages this past season showed only 29 per cent in this older age grouping. Since the percentage of fawns harvested in both examples was comparable, it would appear that there is a heavier mortality among older deer of the Swan-Clearwater area than of Montana antelope in the older age classes (i.e. 3½ years and older). It thus appears that in spite of the past hunting pressures, there is an abundance of antelope escaping into older age classes to maintain a high herd productivity.

Submitted by: Sumner Dow
Unit Fellow

Approved: Robert F. Cooney
Director
Wildlife Restoration Division

January 15, 1952

WINTER RECONNAISSANCE AND FEEDING OF HI-LINE ANTELOPE

DATE:

January 27-31, 1950

February 1-6, 1950

PERSONNEL:

W. K. Thompson, Asst. Director, Wildlife Restoration Division

Herb Friede, Supervisor, Montana Fish and Game Department

Eddie Du Beau, Deputy Game Warden

Asa Rogers, Deputy Game Warden

Tom Sure, Deputy Game Warden

L. E. Brown, Fieldman, Wildlife Restoration Division

Don L. Brown, Asst. Big Game Biologist, Wildlife Restoration Division

INTRODUCTION AND PURPOSE:

Winter weather conditions along the International Boundary (Mountana-Canada) frequently necessitate a southern drift of antelope into the breaks of the Milk River for protection and food. However, this is the first time in several decades that weather conditions have forced a major drift of antelope into the valley of the Milk River. For this reason it was deemed advisable to investigate the condition and distribution of these antelope.

PROCEDURE:

Two aerial checks were made along the Hi-line to determine antelope numbers and their distribution. Artificial feeding was to be carried on in areas where antelope were sufficiently concentrated. The purpose of this feeding was to keep antelope off railroad right-of-ways and to supplement inadequate forage.

FINDINGS & CONCLUSIONS:

Weather conditions, in the form of extreme cold and deep snow, had forced antelope into the Milk River Valley. Although conditions in the valley were only slightly better than elsewhere, it did offer some protection from the cold winds. Actually they concentrated here only because they had no other place to go. If they continued south they would be on the open plains and under the same conditions from which they had fled. Consequently, this concentration led to some losses of antelope which ventured onto railroad tracks, with the inevitable protest from sportsmen's organizations, and depredations were occurring to hay supplies which caused many ranchers to demand action.

It is estimated from various sources of information that approximately 200 antelope lost their lives while feeding on the railroad right-of-way. The number that have died from natural causes will not be known until after the spring breakup and only then can it be estimated.

Antelope were scattered along the entire length of the Milk River Valley in groups of from two or three, to thirty or forty head, with the exception of large concentrations north of Chinook, Harlem, Malta and Glasgow. It was estimated from aerial reconnaissance that there were 3,500 antelope wintering along the entire length of the Milk River. In addition, Deputy Game Wardens Rogers and Du Beau reported several hundred antelope had crossed the Milk River and were still migrating southward.

Emergency feeding experiments were conducted north of Harlem and Malta. Although some hay was eaten during the first few days, the weather suddenly turned warm and the antelope moved back to wind-swept ridges.

The emergency feeding experiment was not carried on for a sufficient period to determine accurate results. Relief in weather conditions made natural forage available and further feeding unnecessary. However, one-half

Antelope Trail

Antelope migration trails were made through the deep crusted snow. This is an unusual snow condition for this region.

Antelope Feeding Station Near Harlem

Attempts to provide artificial feed for antelope were only partially successful.

ton of second-cutting alfalfa hay was distributed at the various feeding stations and approximately 400 pounds of this hay was utilized. It was concluded that only the antelope that were in extremely poor physical condition utilized hay at the feeding stations. During the most severe weather they continued their drift eastward along the Milk River Valley and natural foraging occurred by pawing snow in rose, buffaloberry, creeping juniper and sage patches. Thus it would have been necessary to change the place of the stations to everchanging concentration points.

RECOMMENDATIONS:

Due to the present warm spell no further action is necessary at present. Should a prolonged cold wave again hit this area, the department should be prepared to continue the feeding experiment. Ten tons of second-cutting alfalfa would be adequate to carry the larger concentrations for a period of ten days.

Feeding dry hay, without water being made available, may cause a greater loss than if they were not fed. Symptoms of this condition should be watched for.

Submitted by:

February 23, 1950

Larry E. Brown, Fieldman
Wildlife Restoration Division

Don L. Brown, Asst. Big Game Biologist
Wildlife Restoration Division

MID-WINTER SURVEY OF HI-LINE ANTELOPE

DATE:

January 27, 28, 1950

PERSONNEL:

Herb Friede, District Supervisor

Asa Rogers, Deputy Game Warden

L. E. Brown, Fieldman, Wildlife Restoration Division

Don L. Brown, Asst. Big Game Biologist, Wildlife Restoration Division

PURPOSE:

Extremely severe weather conditions and deep snow in northern Montana have forced antelope southward to winter range along the Milk River. They have migrated to the breaks of the Milk River before, but not for many, many years have they been forced onto the river bottoms to seek forage among the trees and willows.

For this reason it was deemed advisable to investigate the possibilities of feeding these animals.

PROCEDURE:

An aerial investigation of the Milk River area was made to determine possible sites for feeding stations.

The area, the Milk River flood plain and adjacent breaks between Fresno Dam and Malta, was strip-counted in a north-south direction at two-mile intervals. All antelope observed were recorded on a map for future reference.

FINDINGS:

Crusted snow, varying from 12 to 20 inches deep, forms a blanket over the entire plains area both north and south of the Milk River. Drifted snow in unprotected cuts and coulees reaches depths of over six feet.

These conditions have made it impossible for antelope to find food in any area other than that along the few timbered creeks and on the Milk River. Consequently, the bulk of the northern antelope herd (censused last spring by both Canada and Montana) can be found along the Milk River, West Fork Creek, North Fork Creek, Parallel Creek, and Wayne Creek. Very few antelope were observed more than two or three miles from the river.

While antelope were found to be distributed in small groups along the entire length of the survey area, approximately 50% were observed in three large concentrations: The first concentration which may respond to a feeding program was observed near Zurich. As these antelope were already feeding on some haystacks, it is assumed they would continue to do so if the supply were replenished.

Another larger concentration was seen near the town of Harlem, on Parallel Creek. There are over 350 antelope in a very small area here and it is believed they may respond to the feeding of alfalfa hay. A short distance east of this group, on Wayne Creek, are approximately 100 antelope which may react favorably to feeding. A total of 1,338 antelope were observed between Fresno and Malta, the majority of which were seen between Chinook and Harlem.

CONCLUSIONS AND RECOMMENDATIONS:

It is concluded that a feeding program to include all of these antelope would be impractical. Therefore it is recommended that only antelope found in the three concentration areas be fed on an experimental basis. If they will feed on the alfalfa, the project could be expanded to include as many of the smaller groups as is feasible.

It would be impossible to trap or move these antelope without a heavy loss due to the very deep and crusted snow. Those observed moving about were having a very difficult time.

District Supervisor Friede, Deputy Game Warden Rogers and Fieldman Larry Brown are conducting the feeding experiment and they will submit a report as to their findings at some later date.

Submitted by:

L. E. Brown, Fieldman
Wildlife Restoration Division

Don L. Brown, Asst. Big Game Biologist
Wildlife Restoration Division

January 31, 1950

BLAINE-PHILLIPS-GLASGOW UNITS

International Antelope Census

DATES:

April 18-27, 1949

PERSONNEL:

Al James, Canadian Pilot

Art Bresse, Field Officer, Alberta, Canada

Robert Blackwood, Field Officer, Saskatchewan, Canada

George Sturtz, Jr. Field Asst., Wildlife Restoration Division

Lawrence Brown, Fieldman, Wildlife Restoration Division

Don L. Brown, Asst. Big Game Biologist, Wildlife Restoration Division

PURPOSE:

This investigation was proposed to determine the antelope population that "migrates" between Canada and the State of Montana. As the officials in both the Provinces and the State of Montana had only an estimate of this herd, total numbers were necessary for its proper management.

INTRODUCTION:

The antelope herd that apparently drifts between the Canadian Provinces and Montana was assumed to be in an area of 5,750 square miles. This area varied in width in Saskatchewan from 6 miles to 30 miles north of the border, in Alberta 30 miles north of the border, and in Montana from 6 to 12 miles south of the border.

Antelope that would be farther south of the 6 or 12-mile census area in Montana were not to be considered as part of the migrant herd, at least during this year, nor were those farther north of the 6 to 30-mile strips in Canada.

Herds in Canada, that are north of the Canadian Pacific Railroad, are not likely to drift south because of a double page-wire fence along the right-of-way.

In general, the census area in Canada is comprised of many community pastures, which are used exclusively for grazing. This is especially true from the town of Manyberries, Alberta, east to West Poplar, Saskatchewan. The region west of Manyberries and near Lake Pakowki has been developed into an agricultural community.

In the census area of Montana, the main farming regions are between Whitewater Creek and Hogeland, and that area west of the Milk River. The grazing lands of this region are low, rolling, dune-like hills. The main cover type is the short-grass prairie, with sage species occurring in creek bottoms and in snow pockets along the ridges. However, many of the areas have been disturbed by homesteading and crested wheatgrass was introduced when they were reclaimed for grazing.

PROCEDURE:

The census started on the 18th of April at the West Poplar Port of Entry and terminated on April 29th. Areas were stripped by airplane in a north-south direction, progressing westward to the Sweetgrass Hills. Strip widths were approximately one mile, but as light conditions and terrain varied, strips were regulated by these factors.

Areas for censusing were outlined as work progressed in order to make return-to-base flights as short as possible for the two census crews.

Information acquired on the survey was tallied for each strip. For instance, strip one began at 6:45, direction south, all information recorded in order of occurrence of that strip. Strip two, direction north etc. (See sample sheet) By recording in this manner, flight lines can be plotted, average strip width determined, and a land-use classification given to each strip. Antelope and reservoirs observed on the entire flight could be plotted for future reference by this method.

A waterfowl census was conducted in this area at the time of the antelope survey; "duck strips" were flown from the Canadian Line to the Milk River. These strips were flown in a north-south direction at 12-mile intervals; all waterfowl observed on a quarter-mile strip and all reservoirs in a two-mile strip were recorded. At the same time all antelope on a one-mile strip were tabulated. This additional antelope data was gathered to augment the survey that included only those antelope 12 miles south of the Canadian Line.

FINDINGS:

A total of 5,317 antelope were counted on this joint census. In Saskatchewan, 1,988 antelope were counted in 2,340 square miles of .85 antelope per square mile. Alberta counted 2,329 antelope in 1,260 square miles or 1.85 antelope per square mile. The area censused in Montana consisted of 2,141 square miles, in which 1,093 antelope were counted or .51 antelope per square mile. (See Figure 1 and Table I)

TABLE I

MONTANA FLIGHT RECORD

Location	Antelope	Area Sq. Mi.	Ant./ Sq. Mi.	Reservoirs	Reservoirs / Township
Opheim-Rock Creek	22	252	0.09	22	3.1
Rock Cr.-Frenchman Cr.	120	228	0.53	26	4.1
Frenchman Cr.-Morgan	61	290	0.21	38	4.8
Morgan-Chapman	14	164	0.09	11	2.1
Chapman-Turner	18	144	0.12	16	4.0

TABLE I (Continued)

MONTANA FLIGHT RECORD

Location	Antelope	Area Sq. Mi.	Ant./ Sq. Mi.	Reservoirs	Reservoirs / Township
Turner-Hogeland	24	122	0.17	2	0.5
Hogeland-Hydro Rd.	131	198	0.66	48	8.8
Hydro-Rd.-Battle Cr.	233	147	1.58	42	10.0
Battle Cr.-Woodpile-Coulee	98	77	1.27	12	6.0
Woodpile Coulee-Willow Cr.	65	90	0.72	16	6.4
Willow Cr.-Wildhorse	240	198	1.21	26	4.5
Wildhorse-Milk River	48	47	1.02	6	4.6
Milk River-111° Long.	19	162	0.11	0	0.0
TOTAL	1,093	2,141	0.51	265	4.5
Average Group - 3.66 antelope					

The Blaine Big Game Management Unit had the majority of Montana's antelope. Here 855 were counted--their favored range being between Cherry Ridge and the Milk River.

The area censused in Blaine Unit is approximately 45 per cent of the entire sub-unit, and contains the main summer range for this antelope herd. During the winter months, the antelope of this area band together along Battle Creek and Lodge Creek and drift southeast toward the breaks of the Milk River. A winter check in this unit was made during February and March, and 834 antelope were counted. The winter check and summer counts are reasonably close for a biological census. It would also prove that during the past winter there was little or no drift of Canadian antelope to Montana.

The average group size during this survey was 3.6 antelope and most of the antelope were observed in close proximity to water. The abundance of water from creeks and a greater number of reservoirs in this area may be one of the major factors contributing to larger numbers of antelope in Blaine Sub-unit I.

An estimate of the total antelope population determined by observations made on the duck strips, would indicate there are approximately 900 antelope in this management unit. (See Table II). This agrees with the counts and estimates of the past winter and the present antelope survey. These duck strips were flown north and south from the Canadian line to the Milk River. The north-south direction of these strips is the most desirable direction with regard to antelope, because agricultural areas diminish going north from the Milk River. Thus strips form a fair sample of the entire area.

TABLE II

ANTELOPE OBSERVED ON DUCK CENSUS
(Blaine Management Unit)

Strip No.	Antelope Observed	Length of Strip	Location
3	30	34 miles	2 mi. west of Turner
4	0	36 miles	Edge of Alkali Lake
5	0	30 miles	5 mi. west of Harlem
6	5	28 miles	3½ mi. east of Chinook
7	41	28 miles	2 mi. west of Turner
8	8	36 miles	Lodge Creek
9	3	30 miles	East end Wildhorse Lake
Total	87	222 miles	

Blaine Management Unit: (Sub-unit 1) AREA 2,296 Sq. Miles

$$\frac{2296 \text{ sq. mi.}}{X \text{ antelope}} = \frac{222 \text{ sq. mi. observed}}{87 \text{ antelope observed}} \quad \therefore \quad X = 900 \text{ antelope.}$$

CONCLUSIONS AND RECOMMENDATIONS:

This census established the "International Herd" population and their main ranges. In Montana, the Blaine Management Unit has the main huntable antelope herd (900 antelope). The area of this unit is 2,300 square miles; even though all of this area is not antelope range, the area is under its carrying capacity. Hunting on this region should be limited to the hunting of bucks only and for 100 to 150 permits. The hunting of bucks will not effect the productivity of the herd and the number removed would be lower than the annual increase. The antelope in northwestern Valley and north-eastern Phillips Counties are below huntable numbers at the present time. This latter area should remain closed to allow this herd to reach a higher level before it is again hunted, as there is adequate range for a large herd.

Canadian officials, from both Provinces, discovered their antelope populations were smaller than previously estimated. At the present time antelope are hunted by general open seasons. Both Canadian offícals were of the opinion that hunting regulation in their Provinces would have to be changed.

During winters of crusted snow and severe temperatures, antelope have moved from Canadian ranges to Montana. Migration or drifting of Canadian antelope to Montana is probably responsible for the sportsman's opinion of a greater antelope population in Montana than exists. Because of these opinions and the inadequate information on antelope numbers, hunting seasons in northern Phillips and Valley Counties have been premature.

Poaching was reported in several areas and with the limited size of these herds, it is considered to be a major factor in retarding the increase. Lack of other big game in this region makes antelope the major species to be poached.

Depredation from coyotes is nil or nonexistent at the present time. One coyote was observed in Montana during the entire census. In comparison, eight coyotes were observed while driving from Havre to Wildhorse in 1946.

It is recommended another meeting of the interested parties of Saskatchewan, Alberta and Montana be held to discuss a coordinated management plan.

Submitted by:
Don L. Brown, Asst. Big Game Biologist
Larry E. Brown, Fieldman
Wildlife Restoration Division

September 14, 1949

SAMPLE SHEET
(Figure 1)

MONTANA FISH AND GAME DEPARTMENT

Date ____________ ANTELOPE AERIAL STUDY Fl. No. ____________

Fl. Boundaries: Woodpile Coulee--East
Willow Cr. Rd. --West

Unit Blaine

Sub-unit 1

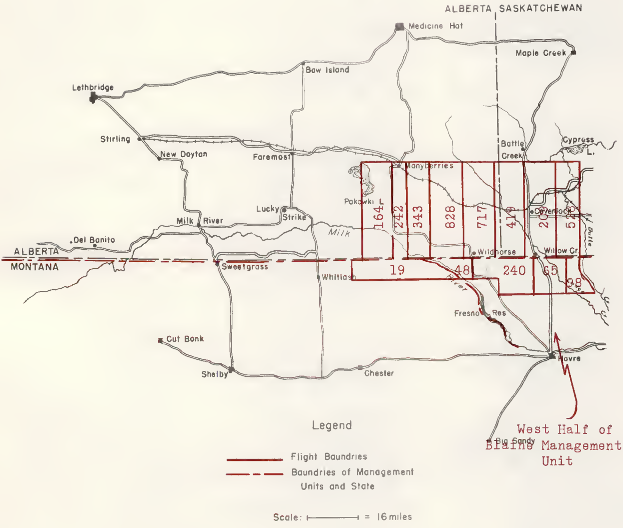
Take Off 6:00 A.M. Land 8:10 A.M. Flying Hrs. 2-10 Time on Strip

Weather Visibility Av. Alt. Strip Width

	Unclass.	Reservoirs	Does	Fawns	Time	Remarks
2	2	• •			6:14	→South (Strip direction)
2	5					
3	3				6:21	→ North
5	5					
	2	• •			6:27	→ South
2	2				6:33	→ North
3	6					
2	3					
	3					
4	3	•—• • •			6:38	→ South
3	1	•—• • •			6:46	→ North
	2				6:53	Off strip -- duck census
63		16				
						6 strips - 8 miles . . strip width 1.3 mi.

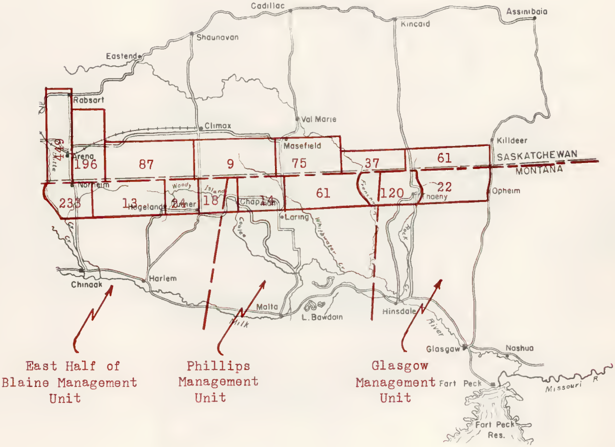
Pilot ____________

Observer ____________

ALBERTA
SASKATCHEWAN
Medicine Hat
Maple Creek
Bow Island
Lethbridge
Stirling
New Dayton
Foremost
Manyberries
Battle Creek
Cypress L.
Pakowki L
Lucky Strike
Milk River
Milk
River
Del Bonito
ALBERTA
MONTANA
Sweetgrass
Whitlash
Wildhorse
Govenlock
Willow Cr.
Butte
Cr
Cr
Fresno Res
Cut Bank
Shelby
Chester
Havre
Big Sandy
164
242
343
828
717
419
209
528
19
48
240
65
98
West Half of Blaine Management Unit
Legend
Flight Boundries
Boundries of Management Units and State
Scale: = 16 miles

INTERNATIONAL ANTELOPE CENSUS

APRIL 1949


Cadillac
Assiniboia
Kincaid
Shaunavon
Eastend
Robsart
Climax
Val Marie
Masefield
Killdeer
Arena
SASKATCHEWAN
MONTANA
Norheim
Hogeland
Turner
Chapman
Loring
Opheim
Theeny
Woody
Island
Coulee
Whitewater Cr.
Frenchman
Rock
Cr.
Milk
River
Chinook
Harlem
Malta
L. Bowdoin
Hinsdale
Glasgow
Nashua
Fort Peck
Missouri R
Fort Peck Res.
647
196
87
9
75
37
61
233
13
24
18
14
61
120
22
East Half of Blaine Management Unit
Phillips Management Unit
Glasgow Management Unit

INVESTIGATION OF ANTELOPE TRANSPLANT SITE

DATE:

May 27, 1949

PERSONNEL:

R. J. Wagner, Rosebud Rod & Gun Club

John B. Nicolay, Deputy Game Warden

K. E. Riersgard, Fieldman, Wildlife Restoration Division

PURPOSE:

The purpose of this investigation was to gain information regarding the Philbrick's Ranch and surrounding territory for its possibilities as an antelope transplanting site.

PROCEDURE AND FINDINGS:

This area is located about 20 miles southeast of the town of Forsyth, in Rosebud County. It lies between Rosebud Creek and East Fork Armell's Creek and is centered on Spring Creek in what is known locally as Sprague Basin. Mr. Philbrick owns or leases most of the land adjacent to Spring Creek. His ranch is located at the mouth of this creek on Rosebud Creek.

Mr. Philbrick accompanied the above named personnel on an inspection trip on this range and gave information pertinent to the investigation.

This area is entirely rangeland consisting mostly of arid hilly grasslands, with open stands of pine and cedar on some of the ridges. In general, this area should be a suitable antelope range. The patches of timber are not large or dense enough to keep the antelope confined to any one drainage. Antelope once frequented this range, but now are found only east of Rosebud Creek.

The small amount of alfalfa, or cropland that is found in this area, is confined to the bottomland along Rosebud Creek.

The Rosebud County Rod & Gun Club is interested in getting this area stocked with antelope and they have obtained a favorable reaction from the ranchers who will be affected.

RECOMMENDATIONS:

It is recommended that this area be considered for an antelope transplant site during the current year. Seventy head of antelope should be an adequate number to be released.

Submitted by:

K. E. Riersgard, Fieldman
Wildlife Restoration Division

September 7, 1949

SPECIAL SEASONS IN MONTANA
WITH PARTICULAR REFERENCE TO
ANTELOPE

Antelope:

There are about 22,000 antelope scattered over the plains regions of Montana. These antelope are located in four general areas. The largest of these areas is the Little Missouri - Powder River group located in the extreme southeastern part of the State. This herd is influenced somewhat by migrations in and out of South Dakota or Wyoming. The Central Montana group is located roughly on the Musselshell and Yellowstone Rivers and extends from the Crazy Mountains to Glendive. The Chouteau County herd is located around Fort Benton with the largest group in or near the Sullivan Game Preserve at Square Butte. The Northern Montana herd is located between the High Line and the Canadian Boundary and extends from Glasgow westward to the Sweetgrass Hills. Its numbers fluctuate with occasional migrations from Canada. Numerous smaller groups are found scattered between these general groups.

The antelope was once our most abundant big game representative of the plains but early day hunting and the succeeding complex land use forced it onto very restricted ranges and eliminated it from many places. The change of land use in recent years from the homesteads back to the larger land holder and more grazing use, has opened up many areas which are again suitable for antelope but barriers such as timbered river bottoms, intensively cultivated lands, etc., have prevented the natural spread of antelope to their original habitats. We have been able to restock several of these areas through a rather intensive trapping program during the past year and plan on continuing this work. Last winter we moved 120 antelope to five new areas. So far this fall we have trapped and moved 210 to several new locations and plans are made to move about 300 more in the near future.

[illegible]

[illegible]

[illegible]

There are about 25,000 antelope scattered over the plains regions of Montana. These antelope are located in four general areas. The largest of these areas is the Little Missouri – Powder River group located in the extreme southeastern part of the state. This herd is influenced somewhat by migrations in and out of South Dakota and Wyoming. The Central Montana group is located roughly on the Musselshell and Yellowstone Rivers and extends from the Crazy Mountains to Glendive. The Chouteau County herd is located around Fort Benton with the largest group in or near the Sullivan Game Preserve at Square Butte. The Northern Montana herd is located between the High Line and the Canadian boundary and extends from Glasgow westward to the Sweetgrass Hills. Its numbers fluctuate with occasional migrations from Canada. Numerous smaller groups are found scattered between these general groups.

The antelope was once the most abundant big game representative of the plains but early day hunting and the succeeding complex land use forced it into very restricted ranges and eliminated it from many places. The change of land use in recent years from [illegible] back to the larger land holdings and more grazing use, has opened up many areas which are again suitable for antelope but barriers such as timbered river bottoms, intensively cultivated lands, etc., have prevented the natural dispersal of antelope to their original habitats. We have been able to restock several of these areas through a rather intensive trapping program during the past year and plan on continuing this work. Last winter we moved 320 antelope to five new areas. So far this fall we have trapped and moved 210 to several new locations and plan [illegible] to move about 200 more in the near future.

The first season on antelope in recent years was opened in 1935 in Carter County. In 1936 there was a season in Chouteau County near Geraldine. These hunts were conducted under a drawing system. In 1943 the bill was passed allowing taking of antelope by special permit. Since then there has been a progressive increase in numbers taken and areas opened.

In 1943 there were 750 permits issued: in 1944 there were 650, in 1945 there were 1550, and in 1946 there were 2450 permits and about 7,000 applicants. According to rather incomplete returns it seems that the kill this year was below normal because of state-wide bad road conditions in the areas of heaviest hunting.

Of interest may be the summarized results of the 1945 antelope kill as determined by card returns. This may be considered normal as far as road conditions and general hunters' chances were concerned. Of the 1550 permits issued, 80% of the cards were returned. Ten per cent of the hunters reported failure. In other words 9 out of 10 got their antelope. In areas where either sex was allowed taken, 60% of the kill was bucks, possibly indicating the hunters' preference here.

Probably written about 1942

SUGGESTED PROCEDURE REGARDING THE PROPOSED ANTELOPE SEASON IN MONTANA

Foreward:

The Bird Crew during the summer of 1941 along with their regular work obtained a general census of the antelope in Montana by counties. They also showed the principal range of this species within the State. This information indicated a total number of 14,000 antelope ranged within the boundaries of the State at that time. Due to the very limited time available, the location of antelope herds was rather general.

The all over picture gained from this work is extremely helpful, however, it is felt that a need exists for additional census work within the counties where heavy antelope populations were indicated. This will supplement the work already accomplished and should be carried out during the late winter and early spring of 1943. This intensive work is deemed necessary in order that proper hunting regulations may be set up. The boundaries of the open areas must be carefully selected in order that small, more or less isolated groups of antelope will not be exterminated and that the hunting will be directed into the areas where it is actually needed from a management standpoint.

Census:

The State has been tentatively divided into three general areas for survey purposes. Number 1, centering about Choteau County and including the northern tier of counties as far east as Valley, will be covered by Deputy Game Warden Nollar, and perhaps others if additional help is found necessary. This section is tentatively called the northern area.

The central section, including the heavy concentrations of antelope in northern Stillwater County, Wheatland, Golden Valley, Musselshell, Petroleum,

and northern Yellowstone, shall be covered by Deputy Game Wardens Sherman and Shook.

The eastern section includes the heavy antelope concentration in Carter, Powder River and Custer counties and also Rosebud, Garfield, McCone and Prairie. This large unit shall be investigated by Deputy Game Warden Rensch and Ken Thompson of the Restoration Division.

It is proposed that where practical airplanes will be used to facilitate this census work. Counting of antelope from airplanes has been found to be quite a satisfactory method in several of our neighboring western states. In the northern unit it is tentatively planned that a plane will be hired from a rancher at Square Butte who is an excellent pilot and intimately familiar with the antelope herds in Choteau County. For the northern tier of counties it may be possible to hire a plane at Havre. The central section will be tentatively divided on the Musselshell River with Sherman handling the northern portion by plane from Lewistown, and Shook the southern section by plane from Billings. These men will of necessity have to work closely together in order that no duplications or omissions will be made.

Section 3 will be handled from Miles City by plane. It is hoped that facilities are available at Broadus for landing and refueling and perhaps also at Jordan. The use of these secondary fields would greatly cut down the flying time. The planes will be used only where they are found to be most practical. There will no doubt be many small groups of antelope that may be checked from the ground.

A careful flight plan will of necessity be drawn up in each section and air time carefully budgeted. It is estimated that the cost of flying will approximate $8 per hour for the hire of a two-place ship. It is felt that the total flying time consumed over the entire area should not greatly exceed twenty hours.

It is thought that the census work should be completed as rapidly as possible as the antelope will no doubt break up into smaller groups with the coming of spring.

Notifying the Public:

The sportsmen should be notified as soon as the census has been completed and the proper numbers to be taken has been determined by counties and hunting areas. The date of the hunt should also be published. The procedure to be followed in obtaining an antelope permit should be clearly explained, and the reasons given for such regulations.

Application for Permit:

Any sportsman desiring to hunt antelope should send a $1 money order to the Fish and Game Department at Helena. The number of his big game license and also the name of the vendor from whom it was purchased should accompany this request. He should also specify in order of preference the counties in which he would wish to secure his antelope. That is, if there should be eight counties open to the hunting of various numbers of antelope, he should list his first choice, and then in order the remaining seven counties.

Drawing of Numbers:

As applications arrive at the Helena office, cards will be sent up for each individual applicant. Upon these cards will be listed the money order number, the number of the big game license, the name of the license vendor, and the list of counties in order of preference. These cards will be alphabetically arranged and then individually numbered. At a specified date prior to the opening of the antelope season, a drawing will be held to select the applicants who may participate in the hunt. The mechanics of this drawing are tentatively as follows:

Two baskets will be used, one containing slips upon each of which will appear a number representing the name of one of the applicants. The other basket will contain slips equalling the total number of slips in the first basket. If it is decided that 2,000 antelope should be killed, 2,000 of the slips in this basket

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Two baskets will be used, one containing slips upon each of which will appear a number representing the name of one of the applicants. The other basket will contain slips equalling the total number of slips in the first basket. If it is decided that 2,000 antelope should be killed, 2,000 of the slips in this basket should be marked to indicate they represent antelope permits, the remainder being blank. It is important that the slips in both baskets should be so folded as to be identical and that it should be impossible to identify their contents from the outside.

The drawing will be held at the Fish and Game Department office in Helena. An uninterested individual will be hired to do the actual drawing of the slips. One will be taken simultaneously from each basket; these two slips will be matched and if the one taken from the permit basket is blank, the individual represented by the slip taken from the other basket will have his dollar returned. If the slip represents a permit, the applicant's card will be examined and if the quota for his first choice as to hunting area (county) has not yet been filled, he will be issued a permit for that area. However, if his first choice has been fully allotted, he will be issued a permit for his second choice, and so on. During the drawing an accurate tally will be kept currently indicating the number of permits issued for each county, and as the limit is reached in each, that county will be closed out as far as the issuance of further permits is concerned.

Immediately following the drawing, the successful applicant will be mailed license and metal tag. Upon the license will be indicated the county in which the individual is to take his antelope. These licenses will be non-transferable. When an animal is killed the hunter shall immediately put on the metal tag. Within 24 hours of the kill he will be required to mail the portion of the license representing a postcard to the Fish and Game Department in Helena. In this way the Department will be kept currently informed ax to the kill in each area.

should be marked to indicate they represent antelope permits, the remainder being blank. It is important that the slips in both baskets should be so folded as to be identical and that it should be impossible to identify their contents from the outside.

The drawing will be held at the Fish and Game Department's office in Helena. An uninterested individual will be asked to do the actual drawing of the slips. One will be drawn simultaneously from each basket; these two slips will be matched and if the one taken from the permit basket is blank, the individual represented by the slip taken from the name basket will have his dollar returned. If the slip represents a permit, the applicant's card will be examined and if the quota for his first choice as to hunting area (county) has not yet been filled, he will be issued a permit for that area. However, if his first choice has been fully allotted, he will be issued a permit for his second choice, and so on. During the drawing an accurate tally will be kept currently indicating the number of permits issued for each county, and as the limit is reached in each, that county will be closed out as far as the issuance of further permits is concerned.

Immediately following the drawing, the successful applicant will be mailed license and metal tag. Upon the license will be indicated the county in which the individual is to take his antelope. These licenses will be non-transferable. When an animal is killed the hunter shall immediately put on the metal tag. Within 24 hours of the kill he will be required to mail the portion of the license representing a postcard to the Fish and Game Department in Helena. In this way the Department will be kept currently informed as to the kill in each area.

PROPOSED HARVEST OF ANTELOPE

County	Estimated Numbers	Probable Increase	Proposed Harvest *	All increase from herds of 500 or more. 50% of increase of herds 200-500. None from herds under 200.
Beaverhead	360	72	35	35
B laine	70	14	14**	14
Broadwater	120	24	---	
Carbon	22	5	---	
Carter	4,000	800	400	800
Cascade	35	7	---	
Chouteau	800	160	80 (50)	160
Custer	500	100	50	100
Dawson	100	20	---	
Fallon	200	40	---	20
Fergus	150	30	---	
Gallatin	40	8	---	
Garfield	500	100	50	100
Glacier	25	5	---	
Golden Valley	550	110	55 (50)	110
Hill	600	120	120 (50)	120
Judith Basin	5	1	---	
Liberty	100	20	20	
Madison	450	90	45	45
McCone	300	60	30	30
Meagher	50	10	---	
Musselshell	600	120	60 (50)	120
Park	3	---	---	
Petroleum	475	95	50	50
Phillips	150	30	30	30
Pondera	35	7	---	
Powder River	1,000	200	100	200
Prairie	200	40	---	20
Richland	20	4		
Rosebud	350	70	35 (25)	35
Stillwater	1,700	340	170 (150)	340
Sweetgrass	200	40	---	20
Teton	200	40	---	20
Toole	75	15	15	
Treasure	75	15	---	
Valley	275	55	55	55
Wheatland	500	100	50 (100)	100
Wibaux	50	10	---	
Yellowstone	250	50	25	25
	15,135	3,027	1,489	2,549

* 50% of increase all counties having over 200.

** All the increase from counties bordering Canada.